

land River, Harlan County, August 1893, *T. H. Kearney, Jr.*, no. 151; Harlan County, August, 1893, *T. H. Kearney, Jr.*)

P. philadelphicum usually has 1–3 spikelets on its spreading branches. The observation that the number of spikelets along a branch and the density of the panicle are too variable to be considered as characters which separate species, is proved by a sheet in the herbarium of Field Museum, a specimen of which has 2–4 appressed spikelets on a branch (MISSOURI: sandstone slopes, 2½ miles NE of Roscoe, St. Clair Co., October 3, 1936, *Julian A. Steyermark*, no. 20196).

P. Tuckermani cannot be separated from *P. philadelphicum* by its “short-exserted panicles” mentioned by Fernald.¹ There is a wide range in the degree of exsertion in both species. Panicles on which the spikelets are immature are usually narrow, but on mature specimens it is more frequent for the main branches of both species to be widely spreading.

Fernald² differentiates *P. Gattingeri* from *P. Tuckermani* by its “shorter and broader leaves, ellipsoid panicle, and more scattered, longer-pedicelled larger spikelets.” Field Museum specimens agree with these characters in all except the “shorter leaves.” The length of the leaves varies greatly in specimens of *P. Gattingeri* and the spikelets are not only longer in *P. Gattingeri*, but are also more turgid than in the specimens of *P. Tuckermani* and *P. philadelphicum*.

Close comparison of the species has led the writers to believe that *P. Tuckermani* can be considered only as a variety of *P. philadelphicum* and, therefore, should be called

Panicum philadelphicum* var. *Tuckermani (Fern.), comb. nov.
Panicum Tuckermani Fernald in RHODORA 21: 111–114. 1919.

HERBARIUM OF FIELD MUSEUM OF NATURAL HISTORY,
Chicago, Illinois

MONOGRAPHIC STUDIES IN THE GENUS ELEOCHARIS—V

H. K. SVENSON

(Continued from page 77)

125. *E. LOEFGRENIANA* Boeckl. (PL. 545, FIG. 7). MAP 51. Perennial; culms *coarse* (ca. 0.5 mm. wide) and *rigid*, 10–17 cm. long, *dull grayish-green*, fasciculate from the apex of an ascending rootstock, striate and obscurely sulcate: sheaths reddish, loose, the apex sub-

¹ RHODORA *ibid.*

² RHODORA *ibid.* p. 114.

dilated, obliquely elongate, acute: spikelets lanceolate, sub-acute, 5–8 mm. long, about 2–20-flowered: scales ovate, appressed, chartaceous, castaneous purple with lighter midrib and margins, *deeply emarginate*, the lowest greenish and strongly appressed, *appearing as though a continuation of the culm*: stamens 3: style 3-fid: achene trigonous, obovate, 2 mm. long, obtusely angled, *semitranslucent*, *grayish-white*, minutely striate-reticulate: style-base brownish-gray, 1.0 mm. long, pyramidal with acuminate to rounded apex: bristles light yellow, equalling or shorter than the achene.—Cyp. Nov. ii. 12 (1890). *E. leptostachys* Lindm. K. Sv. Vet. Akad. Handl. Bihang 26, Afd. 3, no. 9: 13, t. 1 (1900).—BRAZIL: São Paulo, *Loefgren* no. 146 (Cop, TYPE); São João d'El-Rei, Minas Geraes, ad ripam rivuli inter colles et campos argillosos, *Lindman* [Regnell I] A 129 (S, TYPE of *E. leptostachys*). ARGENTINA: Posadas, Misiones, *Speggazzini* no. 20742 (fide Barros, op. cit., 490).

This species is related to *E. filiculmis* (*E. sulcata*), but differs markedly in the rigid glaucescent culms, narrow spikelets with large, deeply-emarginate scales, and much larger achenes. The style-base (probably not correctly shown in Lindman's illustration) is variable, but apparently always sharply-angled.

126. *E. DUNENSIS* Kuekenthal (PL. 544, FIG. 5). MAP 49. Culms fascicled from ascending branches of a ligneous rhizome; culms capillary, 15–30 cm. long, irregularly sulcate: sheaths purple below, becoming pale brown above, with a dark subacute apex: spikelets oblong, obtuse, 7–9 mm. long, 2.5 mm. wide, many-flowered: scales oblong-ovate, dark brown to castaneous, with lighter midrib, obscurely keeled: stamens 3; style 3-fid: achene obovate, 1.4 mm. long, trigonous, narrowed at the apex (below the style-base), olivaceous, shining, prominently pitted-reticulate (subcancellate); style-base inflated, pyramidal, pallid, trilobed at the base; bristles rudimentary.—Fedde, Rep. Spec. Nov. xii. 94 (1913); Barros, Anales, Mus. Hist. Nat. Buenos Aires xxxiv. 473, fig. 24 (1928); Osten, Anales Mus. Hist. Nat. Montevideo, ser. 2a, iii. 175, fig. 9 (1932).—Moist places in coastal dunes, Uruguay and Argentina. URUGUAY: Priapolis, dept. Maldonado, *Osten* no. 5716 (COTYPE, B).

E. DUNENSIS is related to *E. viridans* with which it grows, and perhaps to the Brazilian *E. minarum*, which is known only from an immature collection.

127. *E. VIRIDANS* Kuekenthal (PL. 544, FIG. 3). MAP 48. Perennial, with short ligneous rootstock and coarse roots: culms filiform, 15–30 cm. long, quadrangular-sulcate: sheath purplish to pale brown, the apex truncate to oblique, often with a rudimentary mucro: spikelets frequently proliferous, oblong, subobtuse, 5–10 mm. long, many-flowered: scales elliptic, obtuse, dull reddish-brown, often with a

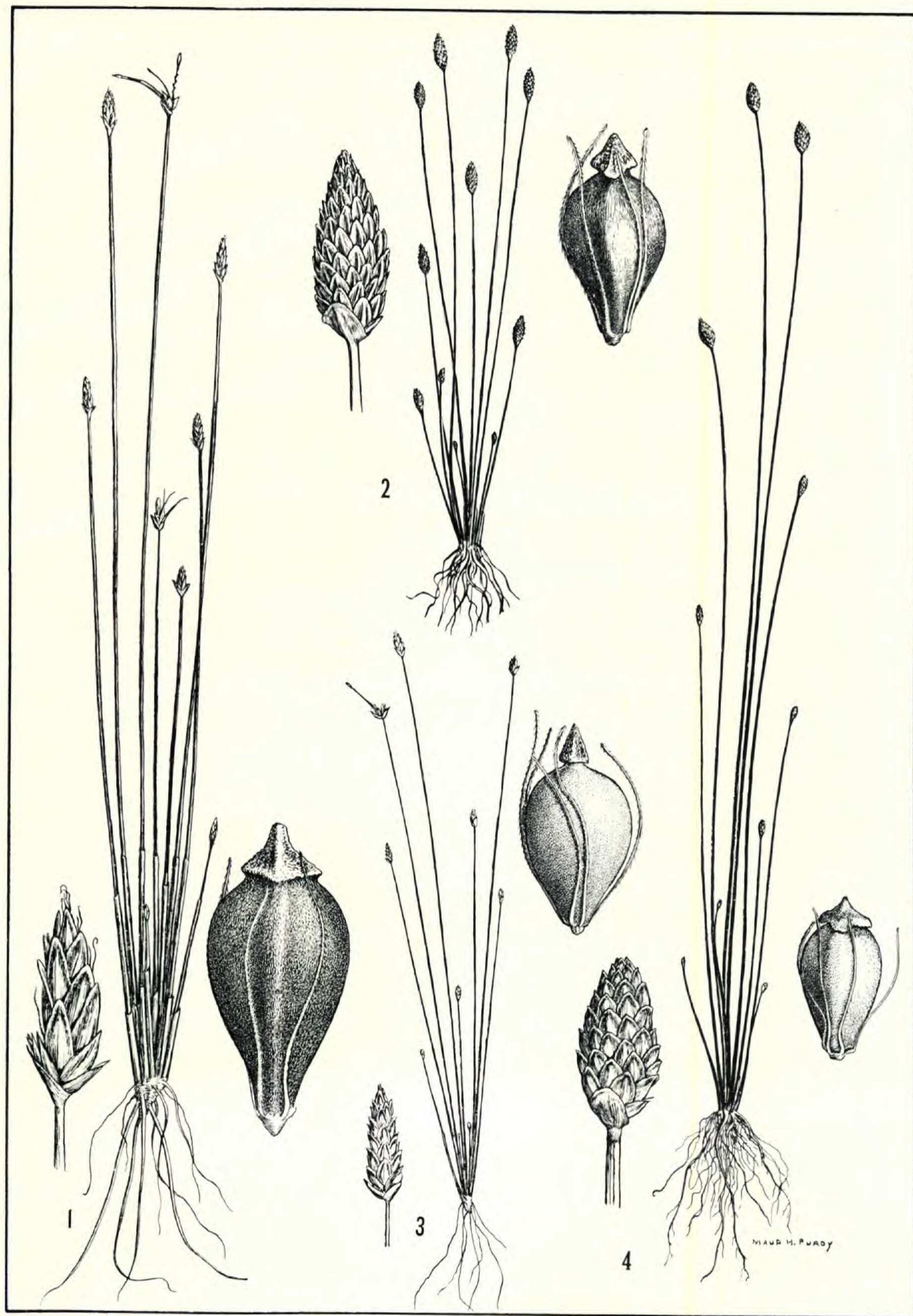
broad green midrib: stamens 3; anthers 2.0 mm. long: style 3-fid: achene broadly obovate, 1.0–1.2 mm. long, trigonous with prominent angles, shining, greenish to pale gray, smooth to obscurely striate-reticulate: style-base pyramidal, brown, trilobed, with the lobes often excurrent on the achene-angles; bristles none or rudimentary.—ex Osten, *Anales Mus. Hist. Nat. Montevideo*, ser. 2a, iii. 175 (1932). *E. intermedia* Maury ex Micheli, *Mém. Soc. Phys. Gèneve* [Fl. Paraguay] xxxi. 137, t. 41A (1890), not (Muhl.) R. & S. *E. sulcata* var. *grandirostris* Lindman, *K. Sv. Akad. Hand. Bihang* xxvii. Afd. 3, no. 9: 13, t. 6, fig. 2 (1900). *E. prolifera* Osten (op. cit.) 177 (1932), not Torr.—URUGUAY: in arenosis maritimis humidis, Canelones, Osten no. 6907 (B) (COTYPE of *E. viridans*); Carrasco, Montevideo, Osten nos. 22478 (B), 22527 (B) (as *H. prolifera*) and Herter no. 606 (G, NY) (as *H. tenuis*). PARAGUAY: Villa Rica, Joergensen no. 3581 (as *E. acicularis*) (NY); S. Paraguay, O. Kuntze in 1892 (as *Scirpus filiculmis*) (NY). BRAZIL: in arenosis apricis subuliginosis, oppidum Rio Grande, Rio Grande do Sul, Lindman [Regnell I] A 601 (G) (COTYPE of *E. sulcata* var. *grandirostris*).

Specimens have been received from Uruguay through the kindness of Mr. Osten. The collections vary considerably, no. 22478 appearing surprisingly like *E. vivipara* of southeastern United States, and diverging from that species only in the comparatively smooth achene-surface. In no. 22478 the achenes seem to be more mature than in the type collection, the surface sometimes becoming gray, with obscure striolate reticulation, and the style-base only obscurely trilobed. Still both appear to be the same species. Citations of *E. pachycarpa* from Uruguay should undoubtedly be referred to *E. viridans*, which has a somewhat similar achene.

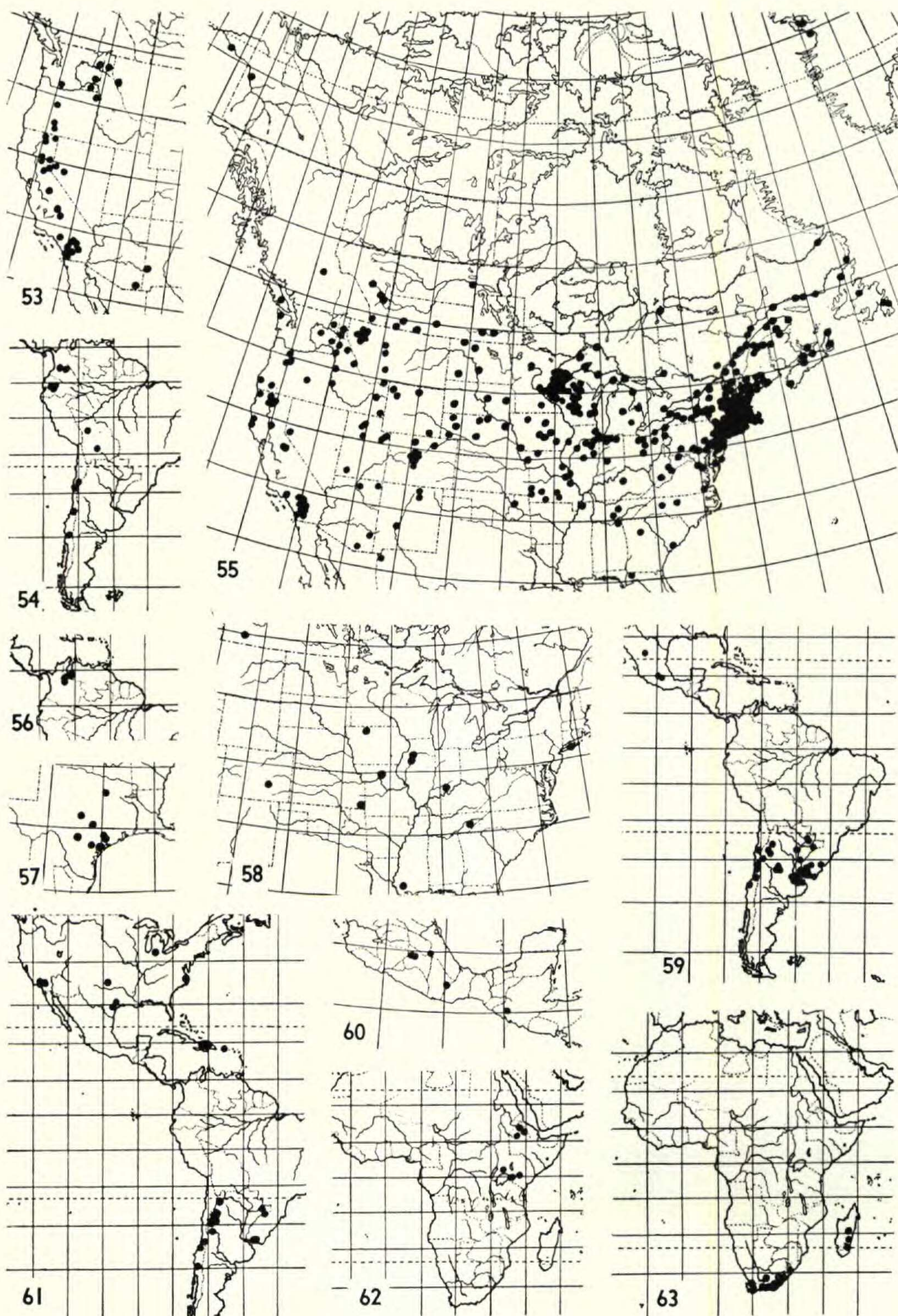
Lindman's illustration was quite evidently drawn from young achenes, which have a smooth semi-translucent buff surface, and relatively larger style-base. *E. sulcata* var. *grandirostris* is therefore, without doubt, the same as *E. viridans*, and so is Jörgensen's specimen (no. 3581) from Villa Rica (the type locality of *E. intermedia* Maury). Much difficulty is encountered here in descriptions and illustrations of immature achenes, and I am of the opinion that Barros' illustration¹ of *H. Niederleinii* Boeckl., also represents *H. viridans*. It shows achenes practically the same as in Lindman's illustration of var. *grandirostris* [lower right] and also one approaching the mature stage [upper right].

128. *E. PACHYCARPA* Desv. (PL. 544, FIG. 4). MAP 50. Perennial, with a thickened descending rootstock; culms fascicled, *rigid, filiform*,

¹ *Anales Mus. Hist. Nat. Buenos Aires* xxxiv. fig. 13 (1928).



ELEOCHARIS, series MULTICAULES (habit $\times \frac{1}{2}$, spikelets $\times 2\frac{1}{2}$, achenes $\times 20$).
 FIG. 1, *E. multicaulis*. FIG. 2, *E. congesta*. FIG. 3, *E. carniolica*. FIG. 4, *E. laeviseta*.



MAPS 53-63. Map of *ELEOCHARIS*, 53, *BELLA*; 54, *EXIGUA*; 55, *ACICULARIS*; 56, *STENOCARPA*; 57, *REVERCHONII*; 58, *WOLFII*; 59, *BONARIENSIS*; 60, *NERVATA*; 61, *RADICANS*; 62, *MARGINULATA*; 63, *LIMOSA*.

10–40 cm. high, erect to recurved, *frequently proliferous*: sheath purple to stramineous, the apex rigid, acute, appressed: spikelets ovate, compressed, 5–10 mm. long, about 8–16-flowered: scales loosely sub-distichous, ovate-lanceolate, obtuse to acute, *purplish-brown to nearly black*, usually with a green midrib, not conspicuously hyaline at the margin: stamens 3, anthers 2.0 mm. long: style 3-fid: achene trigonous with obtuse angles, orbicular-ovate, 1.2–1.5 mm. long, smooth, yellowish-white: style-base pyramidal, subacute to acuminate, the trilobed base *decurrent on the angles of the achene*: bristles slender, equalling the achene or frequently absent.—Desv. in C. Gay, Fl. Chil. vi. 174 (1853); Boeckl. Linnaea xxxvi. 451 (1869–70); C. B. Clarke in Engler, Bot. Jahrb. xxx. Beibl. 68: 22 (1901); Barros, Anales Mus. Hist. Nat. Buenos Aires xxxiv. 464, fig. 19 (1928); Osten, Anales Mus. Hist. Nat. Montevideo, ser. 2a, iii. 180 (1932). *E. leptocaulis* Steud. Syn. Cyp. 77 (1855) (fide Clarke, l. c.). *H. fuscosanguinea* Boeckl. Linnaea xxxvi. 425 (1869–70) (fide Clarke). *H. liocarpa* Philippi, Anal. Univ. Chil. 1873: 553 (1873) (fide Clarke). *H. lepida* F. Philippi, Anal. Univ. Chile xciii. 349 (1896) (fide Clarke). —CHILE: *Philippi* no. 926 (Paris) (det. Desvaux); *Philippi* (K, Paris) (*E. dubia* and *E. leptocaulis*); Constitution, *Philippi* in 1888 (K) (*E. dubia*); Concepcion, *Jaffuel* no. 2954 (G); Paso Cruz, 34°, *O. Kuntze* 128 (K); Corral, *Philippi* (K, as *E. dubia*) and *Buchtien* no. 248 (K); Imperial, Prov. Cautin, *Montero* no. 2007 (G); Temuco, *R. M. Middleton* in 1905 (S); Valdivia, *Buchtien* no. 244 (K), 247 (K) and in 1905 (G) (as *E. leptocaulis*); Valdivia, *Philippi* (K) (Berlin, as *E. leptocaulis*), and *Gunckel* nos. 1903 (G), 1986 (G), 2035 (G), 2045 (G), 3045 (G); Prov. Valdivia, *Lechler* no. 453a (K); in insula Valenzuela prope Valdivia, *Lechler* 249 (K).

Except for an isolated citation by Clarke (l. c.) from Prov. Arica, all the specimens that I have seen, with one exception, come from the coast or mountains of southern Chile. The exception is a collection from Port Jackson District, Australia (G, NY, etc.), distributed as *E. acicularis*. Mr. S. T. Blake has informed me that this is the only known occurrence in Australia. Whether these specimens are the result of a casual introduction or represent another natural link with the Patagonian flora may be left to the reader's imagination. It is hard to ascertain what are Philippi's actual types, but only a single species appears to be represented in Chile, and Clarke's synonymy may be accepted without further question.

Series 9: MULTICAULES¹

- a. Culms 4-angled; achene-bristles enlarged, almost plumose (Orient) 134. *E. tetraquetra*.
- a. Culms not 4-angled, or obscurely so; bristles not plumose, b.
 - b. Upper sheaths mucronate, c.
 - c. Style-base echinate; culms strongly fluted (Australia) 139. *E. acuta* var. *pallens*.
 - c. Style-base smooth; culms striate to smooth, d.
 - d. Achenes sharply trigonous
 - Spikelets pale; culms coarse (Australia) 140. *E. Dietrichiana*.
 - Spikelets purplish; culms slender (Madagascar) . . . 132. *E. Baroni*.
 - d. Achenes biconvex to obscurely trigonous
 - Scales obtuse, strongly deciduous; spikelets obtuse (Australia) 138. *E. cylindrostachys*.
 - Scales acute to acuminate; spikelets acute
 - Achenes 2.0 mm. long; spikelets frequently proliferous (South Africa) 131. *E. limosa*.
 - Achenes 1.5 mm. long; spikelets not proliferous (Australia) 139. *E. acuta*.
 - b. Upper sheath oblique; not mucronate, e.
 - e. Perennial; rootstocks coarse and lignescent, f.
 - f. Culms coarse; achenes 1.5–2.0 mm. long
 - Culms 2–4 dm. high (Europe; Australia) 129. *E. multicaulis*.
 - Culms 4–7 dm. high (E. Africa) 130. *E. marginulata*.
 - f. Culms filiform; achenes 1.5 mm. long (New Zealand) 141. *E. Cunninghamii*.
 - e. Annual; or perennial by inconspicuous tenuous rootstocks, g.
 - g. Achenes trigonous; style 3-fid
 - Culms filiform
 - Style-base much narrower than achene (Orient) 136. *E. pellucida*.
 - Style-base nearly as broad as achene; bristles without teeth (Korea) 135. *E. leviseta*.
 - Culms coarse and rigid (India) 137. *E. congesta*.
 - g. Achenes lenticular; style usually 2-fid (Europe) . 133. *E. carniolica*.

129. *E. MULTICAULIS* Sm. (PL. 546, FIG. 1). Perennial, with a stout caudex bearing thickened yellowish roots; culms rigid, often recurved, 1.5–5 dm. high, markedly striate, *frequently with proliferous spikelets*: sheaths stramineous to purplish, the oblique apex acute to attenuate: spikelets ovate-lanceolate, acute, 5–13 mm. long; scales reddish-brown, sometimes with a greenish midrib, obtuse to acute, the lowermost amplexicaul and usually erect: stamens 3, anthers 2.0 mm. long: *style 3-fid*: achene 1.5–2.0 mm. long, *trigonous*, narrowly obovate, olive-brown, lightly striolate: style-base 0.5 mm. long, gray, acumi-

¹ In Australia, in addition to the European *Eleocharis multicaulis*, a single collection (Port Jackson (G)) of the Andean *E. pachycarpa* is known. *E. acicularis* also has been introduced into Australia; between it and *E. pusilla*, as Mr. S. T. Blake writes me, all intermediate stages are found. Likewise, *E. atricha* is apparently an infertile member of the *Acicularis*-group, of which I have seen the type collection, R. Brown no. 5929 from Port Jackson (Br. Mus.) and a specimen sent me by S. T. Blake, collected by him in Brisbane (no. 4714); both are unidentifiable, but have much the appearance of slender *E. bonariensis*. It is probable that species of sporadic occurrence in other groups (i.e. *Maculosae*) have been introduced.

nate, sharply trigonous with rounded basal lobes; bristles equalling or shorter than the achene.—Engl. Fl. i. 64 (1824); Dietr. Sp. Pl. ii. 46 (1833); Kunth, Enum. ii. 149 (1837); Parlatore, Fl. Ital. ii. 68 (1852); Steudel, Syn. Cyp. 77 (1855); Boeckl. Linnaea xxxvi. 457 (1869–70); Benth. & Mueller, Fl. Austr. vii. 295 (1878); C. B. Clarke, Journ. Bot. xxv. 271 (1887); Terraciano, Malpighia ii. 308 (1888); Aschers. & Graebn. Syn. Mitteleurop. Fl. ii². 294 (1904); Hegi, Ill. Fl. Mitteleurop. ii. 40, fig. 197 (1908); Black, Fl. S. Australia 91 (1922); Ewart, Fl. Victoria 224, figs. 128, 129 (1930). *Scirpus multicaulis* Sm. Fl. Brit. i. 48 (1800); Coste, Fl. France iii. 478, fig. 3793 (1904). *E. gracilis* R. Br. Prod. 224 (1810); Boeckl. Linnaea xxxvi. 430 (1869–70). *Scirpus tener* Spreng. Syst. i. 204 (1825). *Clavula multicaulis* Dumort. Fl. Belg. 143 (1827). (For further illustrations cf. Index Londinensis.)

A member of the Atlantic element of western Europe extending from southern Scandinavia and Scotland to the Azores and northern Africa; eastward to Russia according to Ascherson & Graebner (l. c.) and to Hegi (l. c.), but not listed by Zinserling in Komorov, Fl. U.S.S.R. 1935.

This species was evidently introduced into Australia at a very early date, for Robert Brown obtained specimens from Port Jackson before 1810.

AUSTRALIAN specimens examined: Port Jackson, *R. Brown* (TYPE, Br. Mus., K); Goulburn R., *F. Mueller* (K); Marrabeen, near Sydney, *S. T. Blake* nos. 7429 (B), 7431 (B); Wallangarra, s. e. Queensland, *Blake* no. 4466 (B).

130. *E. MARGINULATA* Hochst. (PL. 543, FIG. 5). MAP 62. Perennial, with stout rootstocks (as in *E. multicaulis*) and coarse gray roots: culms striate, terete, 4–8 dm. long, sheaths truncate with a short mucro: spikelets lanceolate to ovate, obtuse, 1–1.5 mm. long, *frequently proliferous*: scales ovate-oblong, obtuse, *dull brown with greenish keel*: stamens 3; style 3-fid: achene obovate, obtusely trigonous to lenticular, olive-brown, punctulate-reticulate: style-base pallid, short-pyramidal; bristles equalling or shorter than the achene.—Hochstetter ex Steud. Syn. Cyp. 78 (1855); Boeckl. Linnaea xxxvi. 457 (1869–70); C. B. Clarke in Durand & Schinz, Consp. Fl. Afr. v. 598 (1895), and in Thistleton-Dyer, Fl. Trop. Afr. viii. 410 (1902). *E. striata* Hochst. ex Steud. Syn. Cyp. 78 (1855).—ABYSSINIA: in palud. prope Adoam, *Schimper* no. 915 (K, Paris (TYPE)); prope Enschedap, in monte Bachit, prov. Simen, *Schimper* no. 1331 (K) (COTYPE of *E. striata*). BRITISH EAST AFRICA: Ruwenzori Exped., marshes in Mau district (K); north of Lake Nyassa, *Stolz* no. 1072 (Cop, K); Forest Station, alt. 2300 m., Kenia occid., *R. E. & Th. Fries* no. 389 (K).

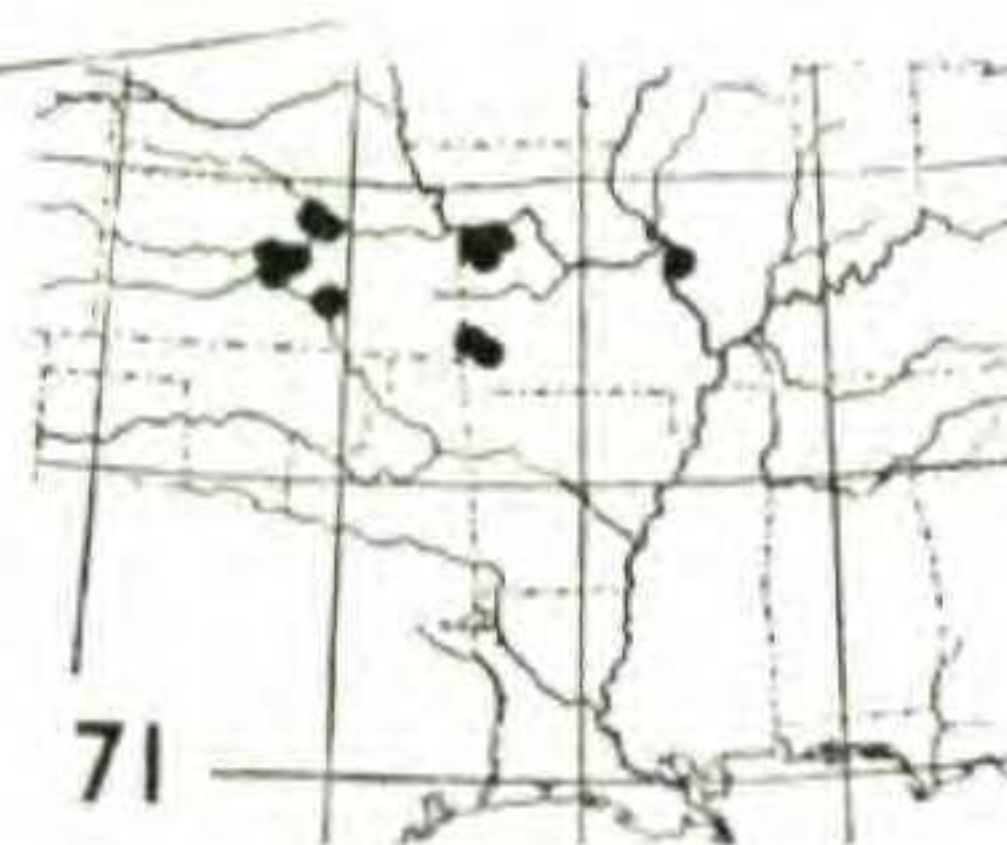
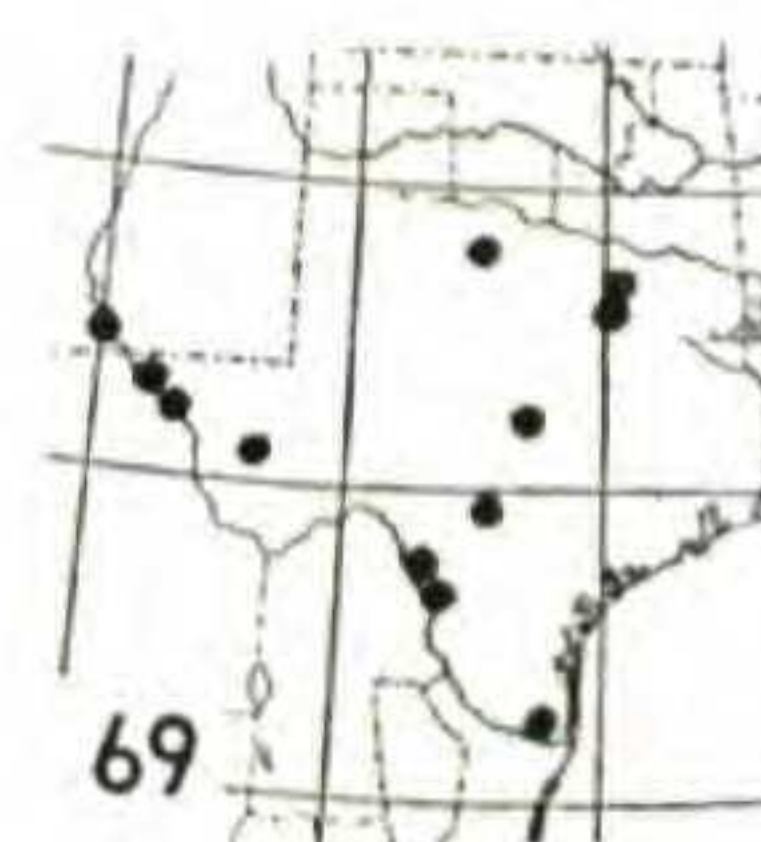
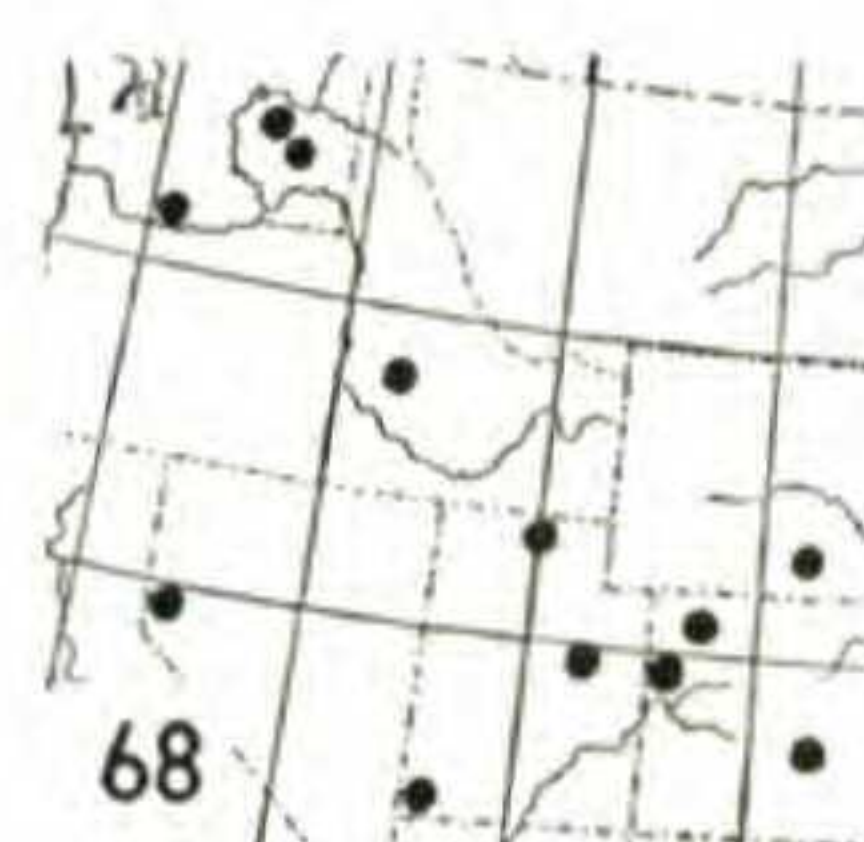
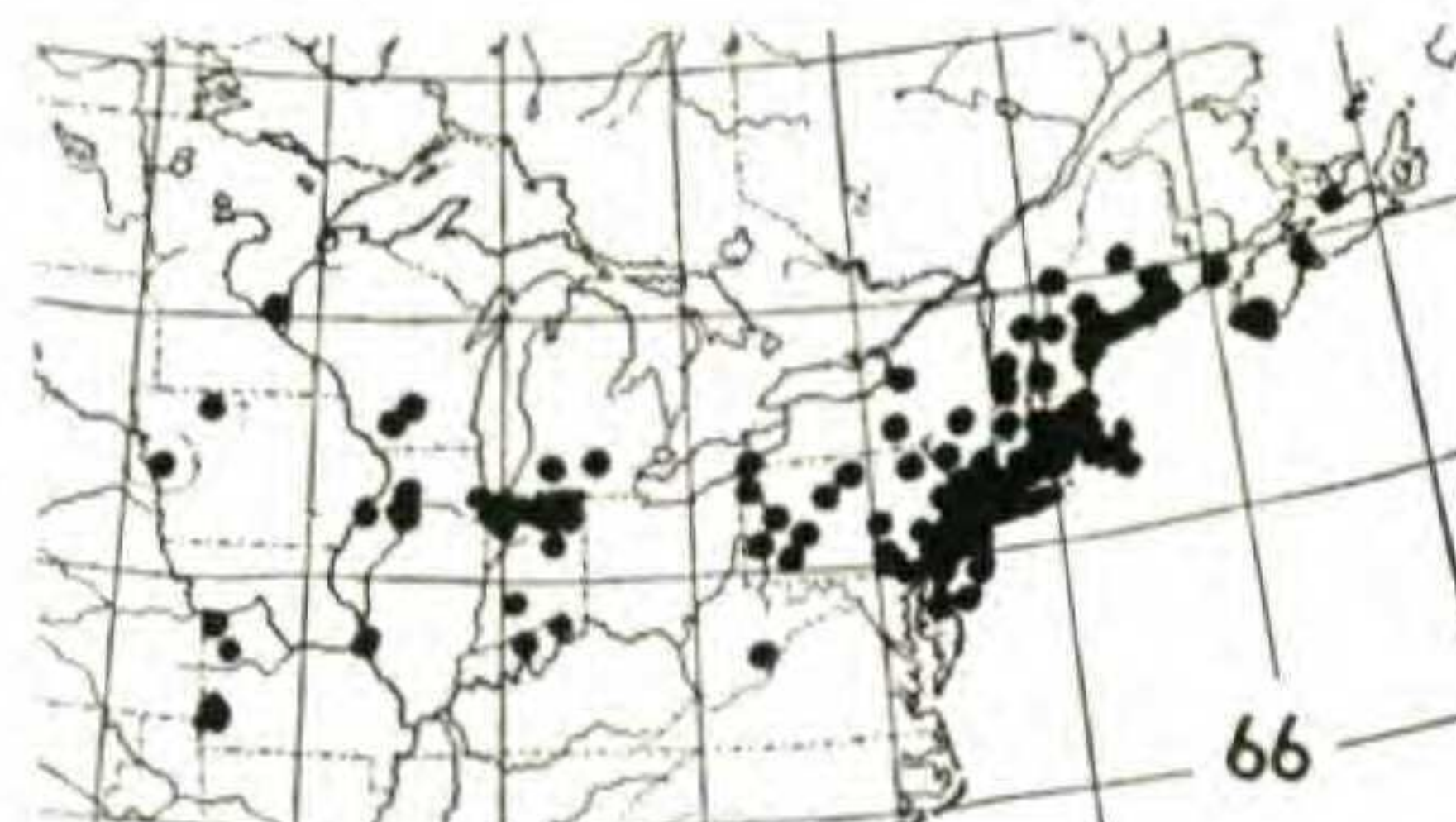
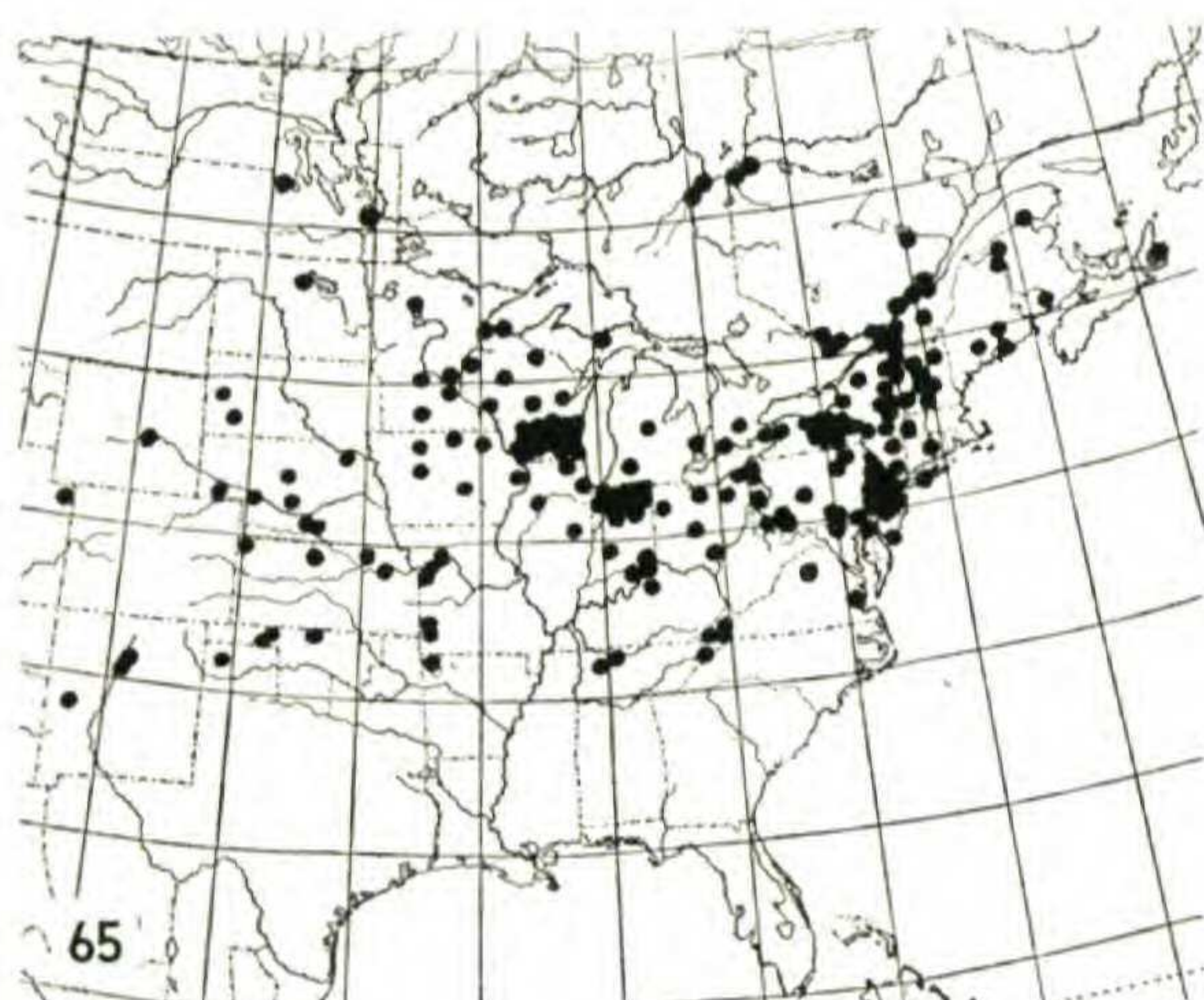
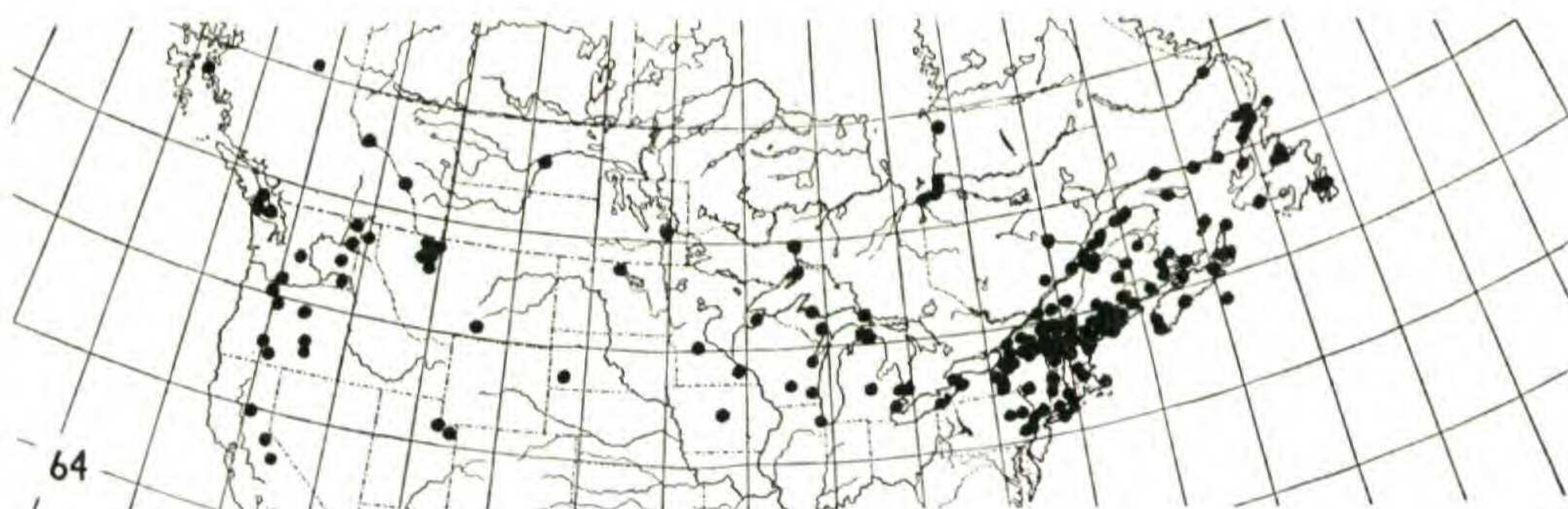
E. marginulata might well be the ancestral form of *E. multicaulis*.

It has the same type of coarse roots and rootstock, and similar proliferous culms which become as long as 7 dm. in *Schimper* no. 915. The achenes also are much the same. However, the collections in East Africa are few, and there is also some difficulty in determining the material which lies between *E. limosa* and *E. marginulata*.

131. *E. LIMOSA* (Schrader) Schultes (PL. 539, FIG. 6; PL. 543, FIG. 3). MAP 63. Culms from a short woody rhizome, 2–6 dm. high, 1–5 mm. wide, striate, *terete*, with firm brown pith; sheaths loose, soft, the apex acute; *spikelets frequently proliferous*, cylindric to acuminate, 1–2 cm. long, 3–4 mm. wide: scales obtuse to acute, often inrolled at the margins, castaneous to dark brown, not keeled: stamens 3, anthers 1.5 mm. long: style 3-fid: achene trigonous to lenticular, obovate, 1.5–2.0 mm. long, olive brown, the surface pitted-reticulate: style-base gray, trigonous, elongate-pyramidal, $\frac{1}{2}$ – $\frac{1}{3}$ as long as the achene-body; bristles from a prominent base, shining brown, equalling the achene.—Mant. ii. 87 (1824); Kunth, Enum. ii. 148 (1837); Steud. Syn. Cyp. 78 (1855); C. B. Clarke in Durand & Schinz, Consp. Fl. Afr. v. 598 (1895), and Thisleton-Dyer, Fl. Capensis vii. 198 (1898); Schonland, S. Afr. Cyp. [Bot. Surv. S. Afr. Mem. 3] 33, t. xxvi (1922); Chermezon, Cat. Cyp. Madag. 36 (1931). *Scirpus limosus* Schrader, Goett. Gel. Anz. iii. 2069 (1821) and Anal. fl. Cap. 129, t. 2, fig. 1 (1821). *E. sororia* Kunth, Enum. ii. 148 (1837); Steud. Syn. Cyp. 78 (1855).—South Africa and Madagascar. SOUTH AFRICA: Port Alfred, *Burchell* no. 3802 (G, K); Zoetemelks River, *Burchell* no. 6607 (G, K, Paris); Umlaas River, Natal, *Kraus* in 1840 (K); Cape of Good Hope, *Zeyher* in 1847 (Paris); “*E. limosa* Kth. b” *Drège* (?) (NY). MADAGASCAR, Antsirabe, *Perrier de la Bâthie* no. 13570 (B).

E. sororia was merely a new name for *Limnochloa capensis*, which seems to be confused as to identity. It perhaps represents the plant of the *Palustres* which I have definitely treated as *E. Dregeana*. Occasionally, as in *Burchell* no. 3802, bifid styles will be found intermingled. Therefore names based essentially on the number of style-branches (as in some early treatments) may prove to be misleading. *E. limosa* was based on a collection by *Hesse*.

132. *E. BARONI* Baker (PL. 539, FIG. 8). Culms densely cespitose, pale green, striate, often twisted, 1.5–2.0 dm. high, 0.5 mm. wide: sheaths truncate or oblique at the apex: spikelets cylindric to lanceolate, acute, 0.7–2.0 cm. long, frequently proliferous: scales dark purplish-brown with low green keel: stamens 3 (or 2): style 3 (or 2)-fid: achene 1.7 mm. long, narrowly obovate, *trigonous* with costulate angles, yellow, smooth: style-base pyramidal, pale gray, $\frac{1}{3}$ – $\frac{1}{4}$ as long as the achene-body; bristles rudimentary or lacking.—Journ. Linn. Soc. xx. 297 (1883); Chermezon, Bull. Soc. Bot. France, ser. 5, iv. 287 (1928), and Cat. Cyp. Madagascar 36 (1931).—MADAGASCAR:



73

MAPS 64-73. Map of *ELEOCHARIS*, 64, *PALUSTRIS* (North America); 65, *CALVA*; 66, *SMALLII*; 67-73, races of *MACROSTACHYA*: 67, distribution of the species; 68, *UINTEA ACUMINATA*; 69, *TEXAS PERLONGA*; 70, *XYRIDIFORMIS*, including Missouri spiral phase; 71, Missouri soft compressed; 72, California *PERLONGA*; 73, Oregon black-scaled.

Ankaratra, 2000 m., *Perrier de la Bâthie* no. 13307 (B); Central Madagascar, *Baron* no. 2076 (TYPE, K). *E. limosa* sensu Clarke in Durand & Schinz, *Consp. Fl. Afr.* v. 598 (1895) (in part), not (Schrader) Schultes.

The type of *E. Baroni* being very young, I have described achenes from *P. de la Bâthie* no. 13307. There is some possibility that the type of *E. Baroni* actually belongs under *E. limosa*, which also grows in Madagascar. Chermezon (l. c., p. 287) has clearly differentiated *E. Baroni*, which is a slenderer plant with smaller spikelets, short scales which are definitely keeled, and achenes without bristles.

133. *E. CARNIOLICA* C. Koch (PL. 546, FIG. 3). Cespitose perennial, with a soft caudex or abbreviated rhizome; culms 0.5–3 dm. long, filiform to somewhat spongy, striate: sheaths stramineous or lightly brown-tinged, the apex oblique and somewhat acuminate: *spikelets often proliferous*, oblong-lanceolate, in age sometimes becoming ovate, 3–13 mm. long, acute: scales ovate, obtuse to subacute, not obviously keeled, green with brownish sides: stamens 2 (rarely 3), anthers 0.5 mm. long; *style 2-fid: achenes obovate-lenticular*, 1.5 mm. long, olive to yellowish green, lightly striolate, narrowed at the apex into an obvious neck: style-base flattened, elongate-conic, gray, $\frac{1}{4}$ – $\frac{1}{3}$ as wide as the achene: bristles pale brown, slightly exceeding the achene.—Syn. Fl. Germ. ed. 2, 853 (1844); C. B. Clarke, *Journ. Bot.* xxv. 269 (1887); Parlatores, *Fl. Italiana* ii. 66 (1852); Boeckl. *Linnaea* xxxvi. 435 (1869–70); Hegi, *Ill. Fl. Mitteleurop.* ii. 42, fig. 199 (1908); Javorka, *Icon. Fl. Hung.* fig. 470 (1929). *Scirpus gracilis* Salzm. ex Rchb. *Ic.* viii. 37, fig. 698 (1846). *Eleocharis Bartoliana* De Notaris, *Ind. Sem. Hort. Genuens.* 24 (1848); Steudel (as *E. Bartoloniana*), *Syn. Cyp.* 80 (1855). *Scirpus carniolicus* Thomé, *Fl. Deutsch.* i. 259 (1903); Aschers. & Graebn. *Syn. Mitteleurop. Fl.* ii². 304 (1904). “Ab Italia boreali usque ad Hungariam (Pedemonta, Styria, Croatia, Carniola, Dalmatia)” C. B. Clarke (l. c.).

Hegi (l. c.) notes that *E. carniolica* is an infrequent species, easily overlooked, growing on river banks and in wet fields to 1000 m. altitude.

134. *E. TETRAQUETRA* Nees. MAP 46. Perennial with a descending rootstock, sometimes with short lateral stolons; culms 3–7 dm. high, *quadrangular* with prominent angles; sheaths stramineous to purplish, the oblique apex brown-margined, with a prominent mucro: spikelets many-flowered, oblong-ellipsoid, obtuse to acute, 1.0–1.5 cm. long; scales subcoriaceous, closely appressed when young, in age becoming somewhat spreading, obtuse, not keeled, castaneous with a ferruginous hyaline margin: stamens 3, anthers 1.0 mm. long: style 3-fid: achene obovate, trigonous (often nearly lenticular), the outer angle obtuse, shining, yellowish-green, lightly striolate-reticulate; *style-base*

submitriform, trigonous to flattened, acute, $1\frac{1}{2}$ as long as the achene-body; bristles deep brown, equalling the achene, densely covered by elongated reflexed teeth.—Nees in Wight, Contrib. 113 (1834); Kunth, Enum. ii. 150 (1837); Boeckl. Linnaea xxxvi. 447 (1869–70); Benth. & Muell. Fl. Austral. vii. 294 (1878); C. B. Clarke in Hook. f. Fl. Br. Ind. vi. 630 (1893), Journ. Linn. Soc. xxxvi. 229 (1903), and Ill. Cyp. t. xxxvii, fig. 17–20 (1909); Koorders, Excurs.-Fl. Java, fig. 247 (1922); Merrill, Enum. Phil. Pl. i. 121 (1922); C. E. C. Fischer, Fl. Presidency Madras 1647 (1931). *Limnochloa tetraquetra* Nees in Wight, Contrib. 113 (1834) (as synonym). *E. erythrochlamys* Miq. Fl. Ind. Batav. iii. 300 (1855). *E. Wichurai* Boeckl. Linnaea xxxvi. 448 (1869–70). *Scirpus hakonensis* Franch. & Sav. Enum. Pl. Jap. ii. 110 (1879), and *S. Onaei* (op. cit.), p. 544. *E. liukiensis* Makino, Tokyo Bot. Mag. xviii. 111 (1904), e descr.—Australia to eastern Asia. AUSTRALIA: Richmond River, Miss Hodgkinson (K). SUMATRA: Asahan, Bartlett nos. 7357 (G), 8074 (G). PHILIPPINE IDS.: Benguet, Luzon, Merrill no. 1762 (G, NY). INDIA: Sikkim, 6–12,000 ft., Hooker f. (G); Mont Khasia 4000 ft., Hooker & Thomson (G). CEYLON: Thwaites no. 2397 (G). CHINA: Tapu District, Kwangtung, Tsang no. 21278 (NY); Lao Shan, Shantung, Chiao no. 2816 (NY); Nanking, Ching no. 8975 (G); Canton, Levine no. 1410 (G); Hupeh, Henry no. 4232 (G); Kinkiang, Kiangsi, 800 ft., Allison no. 10 (G). JAPAN: vic. Kobe, Uno nos. 6377 (G), 13059 (G); Wakayama, Uno no. 6402 (G); Musashi, Sakuraj no. 46 (G). SIBERIA: fl. Bureja, Austro-Ussuria, Komarov no. 246 (G).

The specimens from Japan belong to var. *Wichurai* (Boeckl.) Makino, Native Fl. Japan 738 (1925) (sub fig.), characterized by softer culms and membranous scales. Some additional stations (from the cited bibliography) are mapped in addition to specimens actually examined.

135. *E. LAEVISETA* Nakai (PL. 546, FIG. 4). *E. pellucidae* simili, sed multo robustiori; perenni (?) caudice suberecto; culmis 15–25 cm. longis, circa 0.5 mm. latis, leviter sulcatis; vaginis stramineis ad basin purpurascens, apice paullo inflato, annulo obliquo tumido atrobrunneo cincto, mucrone 0.5 mm. longo instructo: spiculis multifloris, brunneis, 6–10 mm. longis, ovatis vel paullo elongatis, obtusis: squamis obtusis, haud carinatis, dorso cretaceo, lateris brunneo vel castaneo: staminibus 3: stylo 3-fido: achaenio 1.4 mm. longo, obovato, trigono, olivaceo-brunnescente, laeve vel leviter striato: *stylobasi trigoni-mitriformi*, in apice acuto, *angulis decurrentibus*, concolore; *setis* cinnamomeis, achenium aequante, *laevibus*.—Nakai in Mori, Enum. Pl. Cor. 71 (1922), nomen.—KOREA: Prov. Zennan, Isl. Wangto, T. Nakai no. 575, June 20, 1913. TYPE in Herb. Univ. Tokio; COTYPE in herb. Brooklyn Bot. Garden.

Dr. Nakai has kindly sent me an example of this species, which differs from *E. pellucida* primarily in the very broad style-base. It is

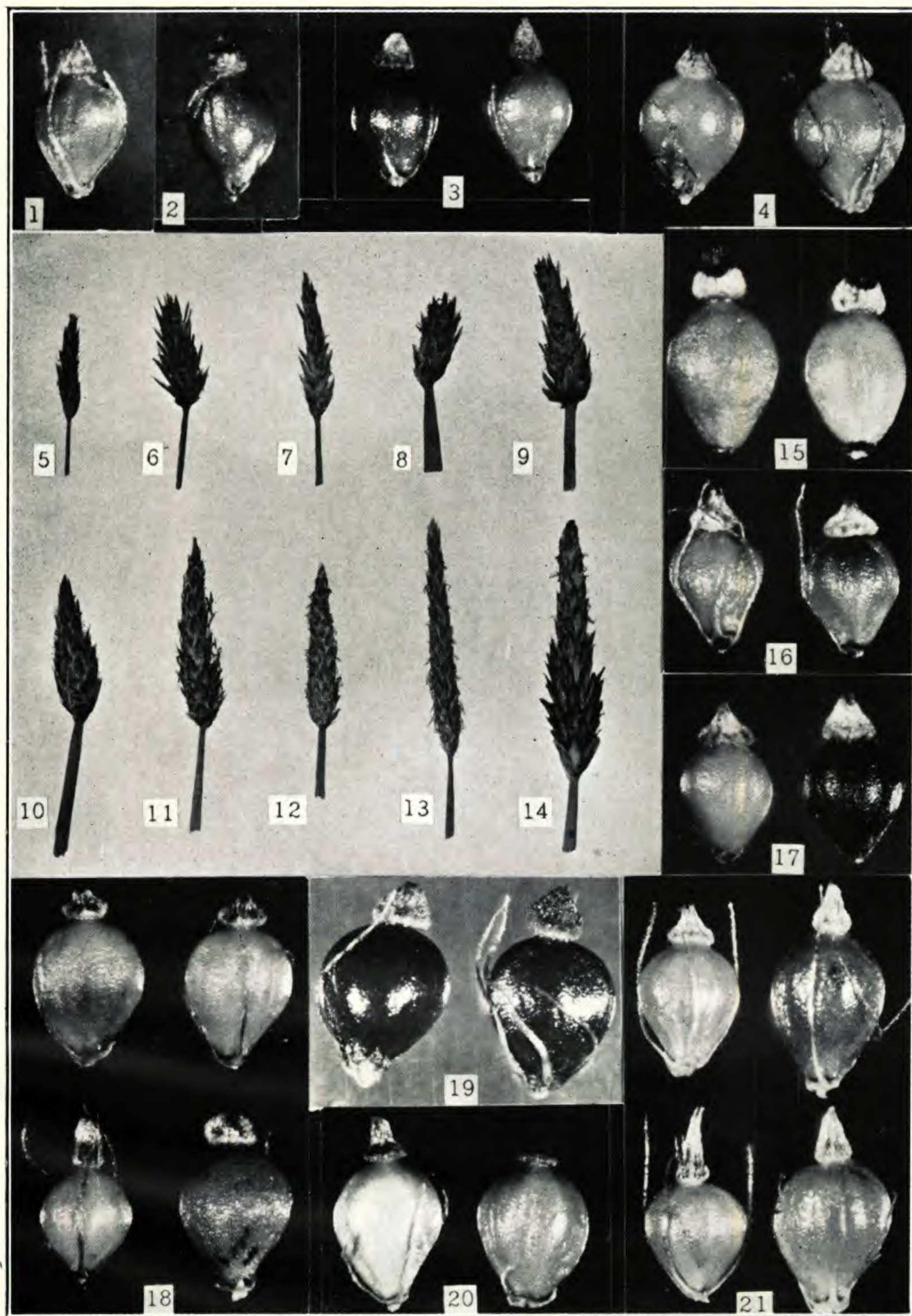


Photo. L. Buhle

ELEOCHARIS (PALUSTRES) (spikelets $\times \frac{2}{3}$; achenes $\times 10$). FIGS. 1, 5, E. CALVA. 2, 6, E. SMALLII. 3, 7, E. MACROSTACHYA (TYPE). 4, 8, E. MAMILLATA. 9, 21, E. PALUSTRIS (Nova Scotia). 10, 15, E. PALUSTRIS (Montana). 11, 20, E. MACROSTACHYA (Uinta Mts.). 12, 16, E. XYRIDIFORMIS. 13, 17, E. MACROSTACHYA (Texas). 14, 19, E. PALUSTRIS (Oregon). 18, E. MACROSTACHYA (Wyoming).

possibly the same as *H. Maximowiczii* Zinserling, Fl. U.S.S.R. iii, 588, t. vii, fig. 1 (1935) from the Amur region, and *Scirpus japonicus* (Miq.) Fr. & Savat. var. *thermalis* Hultén, Fl. Kamtschatka i. 165, t. 5e (1928). The smooth character of the bristles is of minor importance.

136. *E. PELLUCIDA* Presl. Annual or perennial (?) by a short root-stock, culms capillary to filiform, frequently spongy or flaccid, 0.5–4 dm. long, striate to lightly sulcate: sheaths often purplish at base, the apex oblique, often inflated or truncate and with a prominent mucro: spikelets frequently proliferous, ovoid to ovoid-cylindric, acute, many-flowered, 4–8 mm. long: scales ovate-oblong, obtuse to subacute, scarcely keeled, pellucid to opaque light green, or chestnut, with a hyaline border; the lowest larger, semi-erect, and dark opaque green: stamens 2 (rarely 3), anthers 0.5 mm. long: style 3-fid: achenes 1.0–1.5 mm. long, trigonous, narrowly obovate, olive to yellowish-green, lightly striolate; style-base trigonous, gray, acuminate, 3-lobed at the base, much narrower than the achene; bristles light brown, usually exceeding the achene.—Rel. Haenk. i. 196 (1830); Steud. Syn. Cyp. 80 (1855); Miq. Fl. Ind. Batav. iii. 301 (1855); Handel-Mazetti, Symb. Sinicae vii. 1250 (1936). *E. afflata* Steud. in Zoll. Verz. Ind. Archip. 62 (1854), and Syn. Cyp. 76 (1855); Miq. Fl. Ind. Batav. iii. 299 (1855); C. B. Clarke, Journ. Linn. Soc. xxxvi. 226 (1903); Camus in Lecomte, Fl. Indo-Chine vii. 87, fig. 13 (1912); Merrill, Enum. Phil. Pl. i. 119 (1925). *E. japonica* Miq. Ann. Mus. Lugd. Bot. ii. 142 (1865). *E. subprolifera* Steud. Syn. Cyp. 80 (1855); Miq. (op. cit.) 300 (1855); Boeckl. Linnaea xxxvi. 426 (1869–70); Koorders, Exkurs.-Fl. Java, fig. 246 (1922). *Scirpus afflatus* Benth. Fl. Hongk. 394 (1861). *E. subvivipara* Boeckl. Linnaea xxxvi. 424 (1869–70); C. B. Clarke in Hook. Fl. Br. Ind. vi. 629 (1893) and Ill. Cyp. t. xxxvii. figs. 13–16 (1908). *E. Thompsoni* Boeckl., Linnaea xxxvi. 451 (1869–70). *E. chlorocarpa* Boeckl. Flora lxi. 34 (1878). *Scirpus japonicus* Fr. & Savat. Enum. Pl. Jap. ii. 109 (1879). *S. attenuatus* Fr. & Savat. (op. cit.) 543 (1879). *E. Kuntzei* Boeckl. Cyp. Nov. i. 14 (1888). *E. Ga[m]bleana* Boeckl. Allg. Bot. Zeit. 1896. 54 (1896). *E. nipponica* Makino, Tokyo Bot. Mag. xviii. 110 (1904), e descr. *E. Shimadai* Hayata, Ic. Pl. Formos. vi. 107, fig. 24 (1916). *E. Chaetaria* var. *vivipara* (Boeckl.) Fischer, Fl. Presidency Madras 1648 (1931).—Southeastern Asia to Borneo and the Philippines. From numerous specimens the following are cited: CHINA: Fukien Prov., *Ching* nos. 6833 (NY), 6603 (NY), 6482 (NY), 6573 (NY). FORMOSA: *Faurie* in 1914 (G). JAPAN: Waseda, Musashi, *Watanabe* in 1890 (G). KOREA: fl. Yalu, *Komarov* no. 245 (G). INDIA: *Hooker & Thomson*, Mont. Khasia, 0–4000 ft. (G) (COTYPE of *E. Thompsoni* and *E. ochrostachys* Boeckl. (partim)). INDO-CHINA: Tonkin, *Balansa* no. 218 (K). JAVA: in oryzetis, *Zollinger* (TYPE (Paris) of *E. afflata*) (small flowering plant 10 cm. high).

E. pellucida seems to be the earliest name for the small ubiquitous plants of southeastern Asia, frequently proliferous, and with smooth trigonous achenes. The type from Luzon, evidently is the small phase similar to the type of *E. afflata* of Java and to *E. Thomsoni* of eastern India, in which the achenes average 1.0 mm. long. These, I believe, pass directly into the larger plants with achenes often 1.5 mm. long, such as *Scirpus attenuatus* Fr. & Sav., Boeckler's (not Steudel's) *E. ochrostachys*, and a similar collection (*Faurie* in 1914) from Formosa; and probably into the compact, rigid, thick-culmed plants, chiefly of western India, known as *E. congesta*.

137. *E. CONGESTA* D. Don [PL. 546, FIG. 2], Prodr. Fl. Nepal 41 (1825); Kunth, Enum. ii. 152 (1837); C. B. Clarke in Hook. f., Fl. Br. Ind. vi, 630 (1893); Camus in Lecomte, Fl. Indo-Chine vii. 88 (1912); C. E. C. Fischer, Fl. Presidency Madras 1648 (1931). *E. purpurascens* Boeckl. Linnaea xxxvi. 455 (1869-70).

Similar to *E. pellucida*, but with thicker, rigid culms. Hooker (l.c.) considers it as perhaps only a western variety of *E. afflata*, and states that it occurs throughout India (alt. 3000-6500 ft.) except Bengal. The illustration is from Tehri Garwahl, Western Himalaya, *Dudgeon & Kenoyer* no. 129 (B).

138. *E. CYLINDROSTACHYS*¹ Boeckl. [PL. 537, FIG. 7) Flora lviii. 108 (1875); Benth. & Mueller, Fl. Austral. vii. 294 (1878); Bailey, Queensland Fl. 1755 (1902).—QUEENSLAND: muddy creek bank, Lawnton, near Brisbane, *S. T. Blake* no. 1145 (B).

139. *E. ACUTA* R. Br. [PL. 538, FIG. 2] Prod. 224 (1810); Benth. & Mueller, Fl. Austral. vii. 294 (1878); Bailey, Queensland Fl. 1755 (1902); Rodway, Tasmanian Fl. 241 (1903); Cheeseman, Man. N. Zealand Fl. 768 (1906); Black, Fl. South Austral. 91 (1922); Ewart, Fl. Victoria 223 (1930). *E. marginulata* Nees, Ann. & Mag. Nat. Hist. vi. 46 (1841); Steudel, Syn. Cyp. 82 (1855). *E. mucronulata* Boeckl. Linnaea xxxvi. 466 (1869-70).—TASMANIA: Derwent River, *R. Brown* no. 5933, Mar.-Apr. 1804 (TYPE, Br. Mus.) (K); New Norfolk, *Gunn* no. 573 (K). NEW SOUTH WALES: Tharwa, Federal Terr., *S. T. Blake* no. 7539 (B); New England, *C. Stuart* (K); Armidale, *Perrott* (K); Centennial Park, *Kneucker* no. 192 (NY) (as *E. marginulata*). VICTORIA: *Harvey* in 1854 (G); Port Philip, *Mueller* (G). NEW ZEALAND: Tuamarina, *Dr. Haast* in 1866 (K); Bay of Islands, *Wilkes Exped.*

¹ The Australian species of *Eleocharis* are being treated in detail by Mr. S. T. Blake of the University of Queensland, and I have therefore not found it necessary to describe them. However, for a uniform treatment of the groups, I have included illustrations of Australian plants [cf. pl. 538, including figs. 3, 6] with sufficient bibliographic references to account for the nomenclature now in use. And, as a final word, my acknowledgment is expressed for the generosity and cooperation of Mr. Blake, who has placed both notes and specimens at my disposal.

(G, K); Auckland, *Leland, Chase & Tilden* no. 217 (G, NY); Miramar, North Island, *Kirk* no. 187 (G). NORFOLK ISLAND: *Maiden & Boorman* in 1902 (K).

var. *PALLENS*¹ Benth. & Mueller [PL. 538, FIG. 1], Fl. Austral. vii. 295 (1878).—QUEENSLAND: Offham, Warrego District, *S. T. Blake* no. 11235 (B); Mitchell Distr. *Blake* nos. 10361 (B), 11607 (B). NEW SOUTH WALES: Mt. Murchison, *Dallachy & Goodwin* (Br. Mus., NY).

140. *E. DIETRICHIANA* Boeckl. [PL. 538, FIG. 5], Flora lviii. 107 (1875).—QUEENSLAND: edge of fresh-water swamps, Rockhampton, *S. T. Blake* no. 12738 (B).

Boeckeler's type, which came from Rockhampton, was described as having olivaceous, obovate achenes, cuneate-attenuate at base and slightly constricted at the apex.

141. *E. CUNNINGHAMII* Boeckl. Perennial from a ligneous, often thickened, rootstock; culms filiform, 0.5–4 dm. high, irregularly sulcate: sheaths loose, oblique, often purplish, acute to acuminate at the apex: spikelets ovate to lanceolate-oblong, 3–20-flowered: scales obtuse to subacute, membranous, castaneous to purplish: style 3-fid: achene obscurely to prominently trigonous, obovate-pyriform, 1.5 mm. long, green to yellowish-brown, lightly striolate-punctulate: style-base pyramidal, acute; bristles usually exceeding achene.—Flora xli. 412 (1858) and Linnaea xxxvi. 427 (1869–70); Cheeseman, Man. N. Z. Fl. 769 (1906). *E. gracilis* vars. *gracillima* and *radicans* Hook. f. Fl. N. Z. i. 270 (1853) and Handb. N. Z. Fl. 301 (1867). *E. gracillima* Hook. f. Handb. N. Z. Fl. 745 (1867). *H. Hookeri* Boeckl. Linnaea xxxvi. 430 (1869–70). *E. multicaulis* Benth. & Muell. Fl. Austral. vii. 295 (1878). NEW ZEALAND: Bay of Islands, *R. Cunningham* (K) and *Wilkes Exped.* (G); Auckland, *Cheeseman* (K) and *Kirk* no. 14 (G); Papakura, North Island, *Kirk* no. 178 (G); *Cunningham* no. 270 (K).

This variable plant [cf. Cheeseman, l. c.] is exceedingly close to *E. multicaulis* from which it differs chiefly in the slender character of the culm, smaller spikelets, and generally smaller achenes. By Bentham & Mueller (l. c.) it was placed under *E. multicaulis*, which may well be the correct disposal of the species. If so, it has undergone a considerable amount of change in external appearance since its introduction into New Zealand. If it is not a native species, the introduction must have occurred at a very early date, thus a note by C. B. Clarke (?) accompanying one of Kirk's specimen at Kew: "It is the *E. acicularis* of Mr. Richards, and in all probability was collected by d'Urville on his first voyage (1822) but even if not collected until his second voyage (1827) could scarcely have been introduced into Banks Peninsula at

¹ Var. *platylepis* Hook. f. Handb. N. Z. Fl. 745 (1867), quite distinct from var. *pallens*, appears to be of little consequence.

that time as suggested by Bentham." Since *Scirpus cernuus* and allied species were collected as *Eleocharis acicularis* by early explorers, it is difficult in the absence of specimens, to say exactly what species might have been involved.

GEOGRAPHICAL DISTRIBUTION OF SERIES MULTICAULES

This series, under which I have included all the Old World species with 3-fid styles (except the *Mutatae* and *Tenuissimae*), is perhaps not so homogeneous as the other groups. *E. multicaulis* is an "Atlantic" species of Western Europe, centering about the Mediterranean and very close to *E. marginulata*, of the mountains of Abyssinia and Equatorial Africa, which is in turn allied to *E. limosa* and *E. Baroni* of South Africa and Madagascar. In Australia the species corresponding to *E. limosa* seems to be *E. acuta*, with which are associated *E. cylindrostachys* and *E. Dietrichiana*. In New Zealand there is a single species, *E. Cunninghamii*, which is so close to *E. multicaulis* that it might perhaps be considered as a dwarfed and slender variant of that species. Characteristic of southeastern Asia and the larger islands is *E. tetraquetra*, which apparently runs into annual forms toward the northern limit of range. The most widespread and variable species of the group is *E. pellucida* (*E. afflata*), concentrated in southeastern Asia, associated with two doubtfully distinct species (*E. congesta* and *E. laeviseta*), and evidently the source of *E. carniolica* of eastern Europe.

SPECIES OF UNCERTAIN CLASSIFICATION

142. *E. MINARUM* Boeckl. (PL. 545, FIG. 1). Perennial, with thickened vertical rootstocks; culms numerous, filiform, 30–35 cm. high (sometimes proliferous), 4-angled, deeply sulcate, punctate: sheaths purplish-brown below, stramineous above; the oblique apex firm, brown-margined, incurved, with an obscure mucro: spikelets subacute, 5–7 mm. long, 12–15 flowered: scales chartaceous, firm, ovate-lanceolate, obtuse to subacute, brown, scarcely keeled, with yellowish midrib and erose margin, lowest scale larger, greenish, erect, as though a continuation of the culm: style 3-fid.—Cyp. Nov. ii. 12 (1890); Lindman, K. Sv. Akad. Hand. Bihang 26, Afd. 3, no. 9: 13, t. 2, fig. 3 (1900).

I have seen the TYPE collected in Minas Geraes, Brazil, by *Widgren* in 1845 (Stockholm), and also the COTYPE at Copenhagen. *E. minarum*, probably related to *E. dunensis* and *E. viridans* of the Uruguay coast, should never have been described from such immature material.

143. *E. MELANOCARPA* Torr.; Svenson, RHODORA xxxix. 269 (1937).

144. *E. ALBIDA* Torr.; Svenson, RHODORA xxxix. 271 (1937).

145. *E. SQUAMIGERA* Svenson, RHODORA xxxvi. 389 (1934).

146. *E. SUBARTICULATA* (Nees) Boeckl. MAP 37. Culms from an elongate cord-like rootstock; when sterile usually solitary, spongy and thickened, (1–2 mm. wide) often roughened by short interrupted septae (tuberculato-septatis), the fertile culms fascicular, filiform and opaque, 5–15 cm. high: sheaths stramineous to purple, the subinflated apex usually obtuse, purple-spotted, without a mucro: spikelets *fusiform* to lanceolate, acute to *acuminate*, 4–10 mm. long, 15–25-flowered: scales obtuse to subacute, obscurely keeled, greenish-castaneous with a purplish border: stamens 3, anthers 0.7 mm. long: style 3-fid: achene trigonous to almost planoconvex, narrowly obovate, shining olivaceous, deeply reticulate: style-base narrow, subulate, gray, $1/3$ – $1/4$ as long as the achene-body: bristles light brown, shorter than or exceeding the achene.—Linnaea xxxvi. 455 (1869–70); not Lindman, K. Sv. Vet. Akad. Hand. Bihang. xxvi, Afd. 3, no. 9: t. 2, fig. 2 (1900). *Chaetocyperus subarticulatus* Nees in Martius, Fl. Bras. ii¹. 96 (1842); Steud. Syn. Cyp. 74 (1855). *E. Widgrenii* Boeckl. in Engler, Bot. Jahrb. v. 503 (1884); Lindman (l. c.) 13, t. 2, fig. 6 (1900). *H. Usterii* Palla, Fl. São Paulo 158 (1911).—BRAZIL: sine loc., *Sellow* (Berlin, TYPE) (young flaccid plants without achenes). MINAS GERAES: Caldas, *Widgren* (Berlin, TYPE of *E. Widgrenii*) and *Widgren* in 1845 (S, US). RIO DE JANEIRO: *Andersson* in 1851 (S); Theresapolis, Serra dos Orgãos, *Schenck* (Berlin). SAO PAULO: Avenida Paulista, *Hoehne* no. 9158 (G) (as *H. Usterii*).

The relationship is obscure. The achenes resemble those of *E. intermedia* (Muhl.) R. & S.; and to some extent, those of *E. nodulosa* var. *angulata*.

ELEOCHARIS. INDEX TO SPECIES.

Names of recognized species are in bold front; other names are considered as synonyms. An exclamation point preceding the name indicates that I have seen the type or a cotype. A large number of species of *Palustres* have been recently described by Zinserling from Europe and Asia; these names and some previously published *Palustres* have been omitted from the index but will be found on pp. 55–65. A few determinations in the index are taken from Index Kewensis. Figures following the names refer to the present [species numbers in bold front] and previous papers on *Eleocharis*:¹

i. RHODORA xxxi. (1929); Gray Herb. Contrib. no. lxxxvi.

ii. RHODORA xxxiv. (1932); Brooklyn Bot. Gard. Contrib. no. 65.

¹ ERRATA: i. [1929]. For "orbicular" in Key; lines "c" p. 129, and "m" p. 130, read "obovate."

iv. [1937]. In legend accompanying plates 463–465, delete "Tenuissimae."

iii. RHODORA xxxvi. (1934); Brooklyn Bot. Gard. Contrib. no. 68.

iv. RHODORA xxxix. (1937); Brooklyn Bot. Gard. Contrib. no. 77.

! **acicularis** 36

! aciculariformis = bonariensis 28
acuminata = nom. obscurum (iv. 217)

! **acuta** 139

acutangula = fistulosa 1

! **acutisquamata** 74

affinis = uniglumis 68

! afflata = pellucida 136

! **albibracteata** 85

! **albida** 144

albivaginata = flavescens 51

alta (?) (i. 162)

! **alveolata** 105

! **amazonica** 98

! ambigua = acuta 139

! **ambigens** 66

! amphibia = bonariensis 28

! **anceps** 117

andina = melanostachys 60

andesica = nodulosa 87

! appendiculata = melanostachys 60

! arcuata = fuscopurpurea 43

Arechavaletae = Sellowiana 48

! arenaria = glauca 104

! arenicola = montevidensis 86

argyrolepis = palustris (K. I)

! articulata = interstincta 11

atacamensis = pauciflora 20

! **atropurpurea** 46

! atricha = acicularis (?) 36

aurea = (?) iv. 220

Baeothryon = nom. obscurum
(cf. 64)

Balansaiana = filiculmis 123

! **Baldwinii** 106

bahamensis 45

! **Baroni** 132

! **Barrosii** 96

Bartoliana = carniolica 133

! **bella** 33

benedicta = palustris 56

! Berlandieri = albida 144

! Bermudiana = albida 144

! bicolor = minima 94

biocreata = flavescens (?) 51

biseptata = sphacelata 14

! bivaginata = Dombeyana 82

! **Bolanderi** 76

! **bonariensis** 28

! **brachycarpa** 31

! **Brainii** 114

brasiliensis = elongata (?) 16

! Brehmeriana = crinalis 83

! Brittonii = microcarpa 102

brizantha = geniculata (?) 53

! caduca = geniculata 53

! **caespitosissima** 116

calocarpa 9

! calyptrata = filiculmis 123

! **calva** 64

! camptotricha = nana 97

! **cancellata** 32

! **capillacea** 47

! capitata = geniculata 53

caribaea = geniculata 53

carniolica 133

! carolina = nigrescens 100

! **cellulosa** 5

! **Chaetaria** 113

chlorocarpa = pellucida 136

! chrysocarpa = nodulosa 87

cognata = interstincta 11

comosa = acicularis 36

! compacta = spiralis 10

! complanata = nigrescens 100

! **compressa** 72

confervoides = Scirpus c.

congesta 137

conica = uniglumis 68

constricta = elegans 89

! contracta = nodulosa (iv. 258)

! consanguinea = nodulosa 87

! costaricensis = filiculmis 123

costata = acicularis 36

! costulata = radicans 27

crassa = palustris 56

crassiculmis = elegans 89

! **crinalis** 83

crispovaginata = Sellowiana 48

! cubensis = microcarpa 102

! **Cunninghamii** 141

! Curtissii = vivipara 107

! **cylindrica** 75a

cylindrostachys 138

! **debilis** 44

! **decumbens** 78

! depauperata = retroflexa 103

! **densa** 89a

densesquamata = elegans 89

! diandra = ovata 39

Dietrichiana 140

! disciformis = Parishii 79

! dispar = geniculata 53

! **Dombeyana** 82

! **Dregeana** 61

! dubia = pachycarpa 128

- dulcis** 13
 ! **dunensis** 126
 Durandii = minima 94
 ! Dussiana = flavescens 51

 ! Ekmanii = Sintenisii 52
 ! elata = plicarhachis 19
 ! **elegans** 89
 Elliottii = equisetoides 12
 ! **elliptica** 70
 ! **elongata** 16
 emarginata = quinquangularis (?) 122
 ! **Engelmanni** 40
 ! equisetina = dulcis 13
 ! **equisetoides** 12
 erratica = atropurpurea 46
 erythrochlamys = tetraquetra 134
 ! erythropoda = calva 64
 ! **exigua** 26
 exilis = Schaffneri 49
 ! **fallax** 66a
 fennica = uniglumis 68

 ! **filiculmis** 123
 ! filiformis = tenuis 71
 fistulosa 1
 ! flaccida = flavescens 51
 ! **flavescens** 51
 funebri = melanostachys 60
 ! **fuscopurpurea** 43
 fusco-sanguinea = pachycarpa 128
 Gableana = pellucida 136

 ! galapagensis = Sellowiana 48
 ! **geniculata** 53
 ! **glauca** 104
 ! **glauco-virens** 124
 ! glaucescens = palustris 56
 ! Glazioviana = maculosa 42
 Glehni = kamtschatica (?) 69
 ! gracilis = multicaulis 129
 ! gracillima = Cunninghamii 141
 Graeffeana = laxiflora 7
 ! grandis = nudipes 120
 ! **grisea** 109
 haematolepis = nodulosa 87
 ! halmaturina = not *Eleocharis*
 ! **halophila** 67
 Haumaniana 93
 Helenae = Schweinfurthiana (?) 115
 ! Hildebrandtii = nigrescens 100
 homonyma = Sellowiana (i. 234)
 ! Hookeri = Cunninghamii 141
 hyalinovaginata = fuscopurpurea 43

 ! **intermedia** 80
 ! **interstincta** 11
 ! **intricata** 55

 ! Jamesonii = minima 94
 japonica = pellucida 136
 ! **Jelskiana** 18

 kamtschatica 69
 ! Kirkii = geniculata (iv. 254)

 ! laetevirens = flavescens (?) 51
 ! **laeviseta** 135
 ! **lanceolata** 41
 ! **laxiflora** 7
 Lechleri 90
 Lehmanni = palustris 56
 ! Lehmanniana = maculosa 42
 ! **Loefgreniana** 125
 lepida = pachycarpa 128
 ! lepta = (?) *Eleocharis* (iv. 254)
 ! leptocaulis = pachycarpa 128
 ! leptostachys = Loefgreniana 125
 ! Lereschii = atropurpurea 46
 ! leucocarpa = subfoliata 108
 ! Lindheimeri = radicans 27
 Liebmanniana = urceolata 95
 ! **limosa** 131
 liocarpa = pachycarpa 128
 ! litoralis = melanostachys 60
 liukiensis = tetraquetra 134

 ! **Macounii** 81
 ! macra = debilis 44
 macrantha 21 (i. 177)
 ! macrorhiza = melanostachys 60
 ! **macrostachya** 58
 ! **maculosa** 42
 ! madagascariensis = intricata 55
 ! **margaritacea** 22 (iii. 386)
 ! **marginulata** 130
 media = fistulosa 1
 ! **melanocarpa** 143
 ! melanocephala = albibracteata 85
 ! **melanomphala** 25
 melanosperma = geniculata (?) 53
 ! **melanostachys** 60
 mendocina 91
 ! Mendoncae = maculosa 42
 mesopotamica = Sellowiana 48
 mexicana = elegans 89
 ! **microcarpa** 102
 ! microformis = geniculata 53
 ! **minarum** 142
 minor = palustris 56
 ! **minima** 94
 ! **minuta** 54

- ! minutiflora = nigrescens 100
! **minutissima** 110
! **mitracarpa** 62
! **mitrata** 17
! monandra = atropurpurea 46
! montana = nodulosa 87
! **montevidensis** 86
! monticola = Engelmanni 40
mucronulata = acuta 139
Muhlenbergiana = n. obscur.
(cf. 64)
multicaulis 129
! multiflora = atropurpurea 46
mutata 4
- ! **nana** 97
Naumanniana 119
nebrodensis = palustris 56
! **neo-zealandica** 59
! **nervata** 30
! nervosa = ambigens (?) 66
Niederleinii = viridans (?) 127
! **nigrescens** 100
nipponica = pellucida 136
! **nitida** 73
nodulosa 87
! nubigena = albibracteata 85
! **nudipes** 120
! **nuda** 8
! **nupeensis** 2
- obsoleta = interstincta 11
obtusa 38
obtusangula (nom. nudum)
! obtusetrigona = fistulosa (i. 161)
ocreata = flavescens (i. 277)
! ochrostachys = laxiflora 7
! **olivacea** 50
! **oligantha** 99
! oropuchensis = minima 94
ovata 39
oxyneura = bonariensis 28
- ! **pachycarpa** 128
! **pachystyla** 121
! pallida = Scirpus cespitosus
! **Palmeri** 77
! **palustris** 56
! paracicularis = nigrescens 100
! **Parishii** 79
Parodii 88
parvula 23
! **pauciflora** 20
pellucida 136
! perlonga = macrostachya 58
! Perrieri = nigrescens 100
! philippinensis = nuda 8
! pileata = kamtschatica 69
- Pittieri = flavescens (?) 51
! planiculmis = fistulosa 1
! plantaginea = dulcis 13
! plantaginoides = dulcis 13
! platypus = rostellata (iii. 384)
! **plicarhachis** 19
polycaula = palustris 56
! praticola = flavescens 51
! prolifera = nom. conf. (iv. 241)
! punctata = nana 97
purpurascens = congesta 137
purpureo-vaginata = filiculmis
123
! **pusilla** 37
! pygmaea = parvula 23
! **quadrangulata** 3
! **quinquangularis** 122
- ! **Rabenii** 84
! **radicans** 27
! Ravenelii = nodulosa 87
recurvata = Chaetaria 113
! reclinata = intermedia 80
! **retroflexa** 103
! **Reverchonii** 34
! riparia = geniculata 53
! rivularis = exigua 26
! **Robbinsii** 15
Rothiana = filiculmis 123
! **rostellata** 24
- ! Sagotii = Jelskiana 18
! Salzmanniana = Sellowiana 48
! savannarum = minima 94
! **Savatieri** 63
! scariosa = mutata 4
! **Schaffneri** 49
! Schlechteri = ?geniculata (iv. 255)
! Schottiana = maculosa 42
! **Schweinfurthiana** 115
! **Sellowiana** 48
septata = interstincta 11
! setacea = geniculata 53
! Shaferi = Sintenisii 52
Shimadai = pellucida 136
! Sieberi = variegata 6
! simplex = tuberculosa 112
simulans = melanostachys 60
! **Smallii** 65
! singularis = elegans 89
! **Sintenisii** 52
sororia = limosa 131
spadicea = subfoliata (?) 108
Spegazzinii 92
! **sphacelata** 14
spiralis 10
! squamata = squamigera (?) 145
! **squamigera** 145